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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
SUGENT, JAMES F	

ART UNIT	PAPER NUMBER
2116	

DATE MAILED: 10/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/623,417	CHHEDA ET AL.	
	Examiner	Art Unit	
	James F. Sugent	2116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/18/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is sent in response to Applicant's Communication received August 1, 2006 for application number 10/623,417 originally filed July 18, 2003. The Office hereby acknowledges receipt of the following and placed of record in file: amended Claim 1-23 (wherein claim 4 is canceled) are presented for examination.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on July 18, 2003 was filed. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-3 and 5-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fung (U.S. Patent Publication No. 2002/0004912 A1) (hereinafter referred to as Fung) in view of Loucks et al (U.S. Patent No. 5,650,936) (hereinafter referred to as Loucks).

As to claim 1, Fung discloses a system for power management of a rack of computers, the system comprising: server side infrastructure (SSI) circuitry (server module 402) at each computer in the rack, the SSI circuitry including local monitoring circuitry (activity indicator generator 406) coupled to a central processing unit (CPU) (404) of the computer (as argued in previous Office Action; paragraph 104, lines 4-15 and paragraph 107, lines 24-35); and, a centralized power management module (CPMM) (management module 430) with an out-of-band (OOB) management link to the SSI circuitry at each computer in the rack (as argued in previous Office Action; paragraphs 40-41 and paragraphs 84, 85, 90, 151-152 and paragraph 107, lines 21-32), wherein the CPMM (430) is configured to monitor power (via SM control unit and algorithm 432) being consumed by the CPUs by sending a polling message to the SSI circuitry at each computer in the rack (Fung discloses the SM control unit and algorithm 432 "retrieving" activity indicators which necessitates requesting and/or polling; paragraph 104, lines 4-15 and paragraph 107), wherein the local monitoring circuitry (406) within the SSI circuitry (402) at each computer in the rack monitors is configured to monitor power consumption at the CPU and respond to the polling message from the CPMM by transmitting an activity indicator or power consumption value to the CPMM (Fung discloses activity indicators being retrieved from the local monitoring circuitry 406 and transmitted to SM control unit and algorithm 432 to be used for adjusting power management modes which is inclusive of power throttling; paragraphs 104,

105 and 107), and wherein the CPMM is further configured to apply a set of rules (as argued in previous Office Action) to the root mean squared power consumption values from the local monitoring circuitry to determine when and at which computers to enable and disable a CPU power throttling mode (paragraphs 107-108 and paragraphs 190-247).

Fung fails to disclose the power value measured and sent to the CPMM is a root mean squared power consumption value.

Loucks teaches a power monitoring unit (100; column 5, line 66 thru column 6, line 1) that calculates the root mean squared voltage to be used to adjust the operation or configuration of the device (column 3, line 57 thru column 4, line 4 and column 7, lines 35-36 and column 8, lines 9-19). Loucks has the additional benefit of having the capability of minimizing storage space on the device in addition to processing power required by a master device (column 3, lines 48-51).

It would have been obvious to one of ordinary skill of the art having the teachings of Fung and Loucks at the time the invention was made, to modify the local monitoring circuitry of Fung to include the ability to measure a root mean squared power consumption value as taught by Loucks. One of ordinary skill in the art would be motivated to make this combination of having root mean squared value measurement capability in view of the teachings of Loucks, as doing so would give the added benefit of having the capability of minimizing storage space on the device in addition to processing power required by a master device (as taught by Loucks above).

As to claim 2, Fung in combination with Loucks taught the system of claim 1, as shown above. Fung further teaches the system wherein the rack of computers (server modules 54) comprises multiple servers mounted in the rack (paragraph 40).

As to claim 3, Fung in combination with Loucks taught the system of claim 1, as shown above. Fung further teaches the system wherein the rack of computers comprise a plurality of blade servers (server modules 54) in a blade chassis (as shown in figure 2; paragraph 40).

As to claim 5, Fung in combination with Loucks taught the system of claim 1, as shown above. Fung further teaches the system further comprising: a console (138) coupled to the CPMM (management module 430) for user interaction (paragraphs 50, 100 and 189).

As to claim 6, Fung in combination with Loucks taught the system of claim 5, as shown above. Fung further teaches the system wherein the console comprises a console (138) connected locally (via bus 140 or 142) to the CPMM (paragraphs 50 and 100).

As to claim 7, Fung in combination with Loucks taught the system of claim 5, as shown above. Fung further teaches the system wherein the console comprises a remote console (136) coupled via a network (through the internet 132 via connection 134) to the CPMM (paragraph 126).

As to claim 8, Fung in combination with Loucks taught the system of claim 5, as shown above. Fung further teaches the system wherein the system is configured to enable a user to setup the aforementioned rules by way of the console (paragraphs 50, 100 and 189).

As to claim 9, Fung in combination with Loucks taught the system of claim 5, as shown above. Fung further teaches the system wherein the system is configured to enable a user to view power consumption data by way of the console (paragraphs 50, 100 and 189).

As to claim 10, Fung in combination with Loucks taught the system of claim 1, as shown above. Fung further teaches the system further comprising: additional CPMMs (one or more management modules 53 in figure 2) with management links (Link as shown in figure 12) to SSI circuitry (server modules 54) at additional racks of computers (Fung further discloses additional groups of computers referred to as server system units 52; paragraph 40); and a power management system coupled to the plurality of CPMMs (paragraphs 42 and 104-107).

As to claim 11, Fung in combination with Loucks taught the system of claim 10, as shown above. Fung further teaches the system wherein the power management system is configured to enable a user to view power consumption data and to customize the sets of rules applied by the CPMMs (paragraphs 50, 100 and 189).

As to claim 12, Fung disclose a server-side apparatus for a rack-mounted computer, the apparatus comprising: local monitoring circuitry (activity indicator generator 406) coupled to a central processing unit (CPU) (404) of the computer (server module 402) and coupled to a centralized power management system (SM control unit and algorithm 432 within management module 430) which is configured to manage power for a rack of computers (as argued in previous Office Action; paragraphs 40-41 and paragraphs 104 and 107), wherein the local circuitry (406) is configured to monitor power consumption at the CPU (as argued in previous Office Action), transmit power consumption data to the centralized power management system (432), receive out-of-band polling messages from the centralized power management system, respond to the polling messages by transmitting an activity indicator or power consumption value to the centralized power management system, and send commands to enable and disable a power throttling mode at the CPU (Fung discloses the SM control unit and algorithm 432

"retrieving" activity indicators which necessitates requesting and/or polling; paragraph 104, lines 4-15 and paragraph 107) (Fung further discloses activity indicators being retrieved from the local monitoring circuitry 406 and transmitted to SM control unit and algorithm 432 to be used for adjusting power management modes which is inclusive of power throttling; paragraphs 104, 105, 107-108 and 190-247).

Fung fails to disclose the power value measured and sent to the centralized power management is a root mean squared power consumption value.

Loucks teaches a power monitoring unit (100; column 5, line 66 thru column 6, line 1) that calculates the root mean squared voltage to be used to adjust the operation or configuration of the device (column 3, line 57 thru column 4, line 4 and column 7, lines 35-36 and column 8, lines 9-19). Loucks has the additional benefit of having the capability of minimizing storage space on the device in addition to processing power required by a master device (column 3, lines 48-51).

It would have been obvious to one of ordinary skill of the art having the teachings of Fung and Loucks at the time the invention was made, to modify the local monitoring circuitry of Fung to include the ability to measure a root mean squared power consumption value as taught by Loucks. One of ordinary skill in the art would be motivated to make this combination of having root mean squared value measurement capability in view of the teachings of Loucks, as doing so would give the added benefit of having the capability of minimizing storage space on the device in addition to processing power required by a master device (as taught by Loucks above).

As to claim 13, Fung in combination with Loucks taught the apparatus of claim 12, as shown above. Fung further teaches the apparatus further comprising: a power measurement link (Link as shown in figure 12) between the local monitoring circuitry (activity indicator generator 406) and the CPU (CPU of management module 430 via server module control algorithm and unit 432) for monitoring power consumption at the CPU (paragraph 107, 24-35).

As to claim 14, Fung in combination with Loucks taught the apparatus of claim 13, as shown above. Fung further teaches the apparatus further comprising: an interrupt line (Link as shown in figure 12) between the local monitoring circuitry (activity indicator generator 406) and the CPU (CPU of management module 430) for transmitting interrupt messages that enable and disable the power throttling mode at the CPU (paragraph 107).

As to claim 15, Fung in combination with Loucks taught the apparatus of claim 13, as shown above. Fung further teaches the apparatus further comprising: a special register (frequency control register 205) writable by the local monitoring circuitry (activity monitor of CPU 201) and readable by the CPU to enable and disable the power throttling mode at the CPU (paragraph 122).

As to claim 16, Fung discloses a central power management apparatus for a rack of computers, the apparatus comprising: a management module (430) coupled via an out-of-band link to local monitoring circuitry (SM control unit and algorithm 432) at each computer (402) in the rack (as argued in previous Office Action; paragraphs 40-41 and 104), wherein the management module (430) is configured to transmit polling messages to the local monitoring circuitry (406), receive an activity indicator or power consumption value from the local monitoring circuitry (406) in response to the polling messages, determine at which computers to

enable and disable a CPU power throttling mode, and transmit messages to said determined computers to enable and disable the CPU power throttling mode (Fung discloses the SM control unit and algorithm 432 "retrieving" activity indicators which necessitates requesting and/or polling; paragraph 104, lines 4-15 and paragraph 107) (Fung further discloses activity indicators being retrieved from the local monitoring circuitry 406 and transmitted to SM control unit and algorithm 432 to be used for adjusting power management modes which is inclusive of power throttling; paragraphs 104, 105, 107-108 and 190-247).

Fung fails to disclose the power value measured and sent to the management module is a root mean squared power consumption value.

Loucks teaches a power monitoring unit (100; column 5, line 66 thru column 6, line 1) that calculates the root mean squared voltage to be used to adjust the operation or configuration of the device (column 3, line 57 thru column 4, line 4 and column 7, lines 35-36 and column 8, lines 9-19). Loucks has the additional benefit of having the capability of minimizing storage space on the device in addition to processing power required by a master device (column 3, lines 48-51).

It would have been obvious to one of ordinary skill of the art having the teachings of Fung and Loucks at the time the invention was made, to modify the local monitoring circuitry of Fung to include the ability to measure a root mean squared power consumption value as taught by Loucks. One of ordinary skill in the art would be motivated to make this combination of having root mean squared value measurement capability in view of the teachings of Loucks, as doing so would give the added benefit of having the capability of minimizing storage space on

the device in addition to processing power required by a master device (as taught by Loucks above).

As to claim 17, Fung discloses a method for power management of a rack of computers, the method comprising: monitoring power consumption (via activity indicator generator 406) at each computer (402) in the rack (as argued in previous Office Action; paragraph 104); receiving polling messages at each computer in the rack (Fung discloses the SM control unit and algorithm 432 "retrieving" activity indicators from the activity indicators 406 which necessitates requesting and/or polling; paragraph 104, lines 4-15 and paragraph 107); and, responding to the polling messages by transmitting an activity indicator or power consumption value from each computer in the rack to a single centralized power manager (SM control unit and algorithm 432) (Fung further discloses activity indicators being retrieved from the local monitoring circuitry 406 and transmitted to SM control unit and algorithm 432 to be used for adjusting power management modes which is inclusive of power throttling; paragraphs 104, 105, 107-108 and 190-247).

Fung fails to disclose the power value measured and sent to the single centralized power manager is a root mean squared power consumption value.

Loucks teaches a power monitoring unit (100; column 5, line 66 thru column 6, line 1) that calculates the root mean squared voltage to be used to adjust the operation or configuration of the device (column 3, line 57 thru column 4, line 4 and column 7, lines 35-36 and column 8, lines 9-19). Loucks has the additional benefit of having the capability of minimizing storage space on the device in addition to processing power required by a master device (column 3, lines 48-51).

It would have been obvious to one of ordinary skill of the art having the teachings of Fung and Loucks at the time the invention was made, to modify the local monitoring circuitry of Fung to include the ability to measure a root mean squared power consumption value as taught by Loucks. One of ordinary skill in the art would be motivated to make this combination of having root mean squared value measurement capability in view of the teachings of Loucks, as doing so would give the added benefit of having the capability of minimizing storage space on the device in addition to processing power required by a master device (as taught by Loucks above).

As to claim 18, Fung in combination with Loucks taught the method of claim 17, as shown above. Fung further teaches the method further comprising: transmitting messages via an out-of-band link (Again using the server rack argument above, Fung discloses that all of the management links between the computers [server modules] and the CCPM [management module] are OOB links [paragraphs 84, 85, 90 and 151-152]) from the centralized power manager (management module 316) to local circuitry (core logic 330 containing power management unit 332) at said determined computers (server modules 302) to enable and disable the CPU (320) power throttling mode at those computers (paragraphs 107 and 110-113); and applying a configurable set of rules (paragraph 189) to the power consumption data (activity indicator data structure 410) to determine at which computers to enable and disable a CPU power throttling mode (paragraphs 107 and 110-113).

As to claim 19, Fung in combination with Loucks taught the method of claim 18, as shown above. Fung further teaches the method further discloses the method of claim 18, wherein the rack of computers comprises a rack of servers (rack mounted server system 50).

As to claim 20, Fung discloses a centralized method for managing power consumption of a rack of computers, the method comprising: transmitting polling messages to local monitoring circuitry (activity indicator generator 406) at each of the computers (402) in the rack (Fung discloses the SM control unit and algorithm 432 "retrieving" activity indicators from the activity indicators 406 which necessitates requesting and/or polling; paragraph 104, lines 4-15 and paragraph 107); receiving responses to the polling messages from the local monitoring circuitry (406) at each of the computers (402) in the rack, wherein the responses include activity indicator or power consumption values (paragraph 107); determining at which computers to enable and disable a CPU power throttling mode; and, transmitting messages to said determined computers to enable and disable the CPU power throttling mode (Fung further discloses activity indicators being retrieved from the local monitoring circuitry 406 and transmitted to SM control unit and algorithm 432 to be used for adjusting power management modes which is inclusive of power throttling; paragraphs 104, 105, 107-108 and 190-247).

Fung fails to disclose the power value measured and sent to the single centralized power manager is a root mean squared power consumption value.

Loucks teaches a power monitoring unit (100; column 5, line 66 thru column 6, line 1) that calculates the root mean squared voltage to be used to adjust the operation or configuration of the device (column 3, line 57 thru column 4, line 4 and column 7, lines 35-36 and column 8, lines 9-19). Loucks has the additional benefit of having the capability of minimizing storage space on the device in addition to processing power required by a master device (column 3, lines 48-51).

It would have been obvious to one of ordinary skill of the art having the teachings of Fung and Loucks at the time the invention was made, to modify the local monitoring circuitry of Fung to include the ability to measure a root mean squared power consumption value as taught by Loucks. One of ordinary skill in the art would be motivated to make this combination of having root mean squared value measurement capability in view of the teachings of Loucks, as doing so would give the added benefit of having the capability of minimizing storage space on the device in addition to processing power required by a master device (as taught by Loucks above).

As to claim 21, Fung in combination with Loucks taught the method of claim 20, as shown above. Fung further teaches the method further discloses the method of claim 20, wherein the rack of computers comprises a rack of servers (paragraph 40).

As to claim 22, Fung discloses a power management apparatus for managing power usage of a rack of computers, the apparatus comprising: means for (440) transmitting polling messages to the local monitoring circuitry (activity indicator generator 406) (Fung discloses the SM control unit and algorithm 432 "retrieving" activity indicators from the activity indicators 406 which necessitates requesting and/or polling; paragraph 104, lines 4-15 and paragraph 107); means for (442) receiving responses to the polling means for receiving messages from the local monitoring circuitry (paragraph 107), wherein the responses include activity indicator or power consumption values (paragraphs 104 and 107); means for (SM control unit and algorithm 432) determining at which computers to enable and disable a CPU power throttling mode (paragraph 107); and, means for (AMPC bus) transmitting messages to said determined computers to enable and disable the CPU power throttling mode (Fung further discloses activity indicators being

retrieved from the local monitoring circuitry 406 and transmitted to SM control unit and algorithm 432 to be used for adjusting power management modes which is inclusive of power throttling; paragraphs 104, 105, 107-108 and 190-247).

Fung fails to disclose the power value measured and sent to the single centralized power manager is a root mean squared power consumption value.

Loucks teaches a power monitoring unit (100; column 5, line 66 thru column 6, line 1) that calculates the root mean squared voltage to be used to adjust the operation or configuration of the device (column 3, line 57 thru column 4, line 4 and column 7, lines 35-36 and column 8, lines 9-19). Loucks has the additional benefit of having the capability of minimizing storage space on the device in addition to processing power required by a master device (column 3, lines 48-51).

It would have been obvious to one of ordinary skill of the art having the teachings of Fung and Loucks at the time the invention was made, to modify the local monitoring circuitry of Fung to include the ability to measure a root mean squared power consumption value as taught by Loucks. One of ordinary skill in the art would be motivated to make this combination of having root mean squared value measurement capability in view of the teachings of Loucks, as doing so would give the added benefit of having the capability of minimizing storage space on the device in addition to processing power required by a master device (as taught by Loucks above).

As to claim 23, Fung in combination with Loucks taught the apparatus of claim 22, as shown above. Fung further teaches the apparatus wherein the means for transmitting messages comprise out-of-band links to the local monitoring circuitry (Again using the server rack

argument above, Fung discloses that all of the management links between the computers [server modules] and the CCPM [management module] are OOB links [paragraphs 84, 85, 90 and 151-152]).

Response to Arguments

Applicant's arguments with respect to claim 1-3 and 5-23 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to James Sugent whose telephone number is (571) 272-5726. The Examiner can normally be reached on 8AM - 4PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Lynne Browne can be reached on (571) 272-3670. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated information system, call (800) 786-9199 (IN USA OR CANADA) or (571) 272-1000.

James F. Sugent
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October 12, 2006

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